What is claimed is:

1. A toric multifocal contact lens comprising a central axis, an anterior surface having a first central optical zone, and an opposite posterior surface having a second central optical zone, wherein one of the first central optical zone and the second central optical zone has a central circular area and an annular region surrrounding the central circular area, wherein the central circular area has a diameter of about 1.0 to about 3.0 mm and is a progressive power addition zone for near vision correction and optionally for intermediate vision correction, wherein the annular region has a spherical or aspheric surface having an optical power for distant vision correction, wherein the central circular area and the annular region are concentric with the central axis, wherein the other one of the first central optical zone and the second central optical zone is a toroidal surface or a biconic surface, wherein the progressive power addition zone has a surface that provides a power addition profile defined by two or more linear functions of equation (3) or by equation (4) or equation (5)

$$
\begin{cases}
p(x) = b_1 + k_1 x & 0 \le x < x_1 \\
p(x) = b_2 + k_2 x & x_1 \le x < x_2 \\
\quad \vdots & \\
p(x) = b_i + k_i x & x_{i-1} \le x < x_i \\
\quad \vdots &
\end{cases}
\tag{3}
$$

$$
p(x) = \frac{A}{2} \cdot \cos\left(\frac{x}{D/2} \cdot \pi \right) + \frac{A}{2}
\tag{4}
$$

$$
p(x) = A \cdot \left[1 - \left(\frac{x}{D/2} \right)^n \right]
\tag{5}
$$

wherein p(x) is an added power at a distance of x from the center; b_i is a coefficient which is the intercept of a linear line; and k_i is the rate of change of the added power as function of the distance from the center; A is the maximum added power; D is the diameter of the progressive power addition zone; and n is any number which can be an integer or non-integer larger than 1 but smaller than or equal to 10, and

wherein the first and second central optical zone combine to provide a cylindrical optical power to correct astigmatism vision errors and a multifocal optical power to compensate for presbyopia.

2. A toric multifocal contact lens of claim 1, wherein the power addition profile is defined by at least two linear functions of equation (3).

3. A toric multifocal contact lens of claim 2, wherein the power addition profile is defined by a first linear function of $p(x) = b_1 + k_1x$ and a second linear function of $p(x) = b_2 + k_2x$, wherein b_1 has a value of from about 3 to about 10, k_1 has a value from -1 to -10, b2 is from 5 to 12 and k2 is from -5 to -13.

4. A toric multifocal contact lens of claim 1, wherein the power addition profile is defined by equation (4), wherein A has a value of from about 3 to about 10.

5. A toric multifocal contact lens of claim 1, wherein the power addition profile is defined by equation (5), wherein A has a value of from about 3 to about 10, and wherein $3 \leq n \leq 5$.

6. A toric multifocal contact lens of claim 1, wherein the other one of the first central optical zone and the second central optical zone is the biconic surface.

7. A toric multifocal contact lens of claim 1, wherein the diameter of said progressive power zone is about 1.8 mm to about 2.3 mm.

8. A toric multifocal contact lens of claim 1, wherein said first central optical zone has said central circular area and said annular region surrrounding said central circular area, and wherein said second central optical zone is said toroidal surface or said biconic surface.

9. A toric multifocal contact lens of claim 8, wherein the diameter of said progressive power zone is about 1.8 mm to about 2.3 mm.

10. A toric multifocal contact lens of claim 1, further comprising one or more orientation features that provide a predetermined orientation on an eye.

11. A toric multifocal contact lens of claim 10, wherein the anterior surface comprises a top slab-off zone near the top of the contact lens and a bottom slab-off zone near the bottom of the contact lens.

12. A toric multifocal contact lens of claim 1, wherein said toric multifocal contact lens is a soft lens.

13. A toric multifocal contact lens of claim 1, wherein the surface of the progressive power addition zone is obtained by: (I) calculating/generating a series of discrete power points along an X-axis according to any one of equations (3) to (5); (II) using a spline-based function to describe a curve that passes through each of the series of calculated power

points and is normal to the central axis and tangent to the curve of the annular region; and

(III) rotating said curve around the central axis.

14. A toric multifocal contact lens of claim 13, wherein the number of the series of power points is from 10 to 30.

15. A toric multifocal contact lens of claim 13, wherein the series of power points are evenly distributed along the X-axis.

16. A method of producing a toric multifocal contact lens, comprising the steps of shaping a contact lens by a manufacturing means to have a central axis, an anterior surface having a first central optical zone, and an opposite posterior surface having a second central optical zone, wherein the first and second optical zones combine together to provide a cylindrical optical power to correct astigmatism vision errors and a multifocal power to compensate for presbyopia,

wherein one of the first central optical zone and the second central optical zone has a central circular area and an annular region surrrounding the central circular area, wherein the central circular area has a diameter of about 1.0 to about 3.0 mm and is a progressive power addition zone for near vision correction and optionally for intermediate vision correction, wherein the annular region has a spherical or aspheric surface having an optical power for distant vision correction, wherein the central circular area and the annular region are concentric with the central axis, wherein the other one of the first central optical zone and the second central optical zone is a toroidal surface or a biconic surface, wherein the progressive power addition zone has a surface that provides a power addition profile defined by two or more linear functions of equation (3) or by equation (4) or equation (5)

$$
\begin{cases}
p(x) = b_1 + k_1 x & 0 \leq x < x_1 \\
p(x) = b_2 + k_2 x & x_1 \leq x < x_2 \\
\quad \vdots & \\
p(x) = b_i + k_i x & x_{i-1} \leq x < x_i \\
\quad \vdots &
\end{cases}
\tag{3}
$$

$$
p(x) = \frac{A}{2} \cdot \cos\left(\frac{x}{D/2} \cdot \pi \right) + \frac{A}{2}
\tag{4}
$$

$$p(x) = A \cdot \left[1 - \left(\frac{x}{D/2} \right)^n \right]$$

(5)

wherein $p(x)$ is an added power at a distance of x from the center; b_i is a coefficient which is the intercept of a linear line; and k_i is the rate of change of the added power as function of the distance from the center; A is the maximum added power; D is the diameter of the progressive power addition zone; and n is any number which can be an integer or non-integer larger than 1 but smaller than or equal to 10.

17. A method of claim 16, wherein said manufacturing means is a numerically controlled lathe or molds.

18. A method of claim 17, wherein said first central optical zone has said central circular area and said annular region surrrounding said central circular area, and wherein said second central optical zone is said toroidal surface or said biconic surface.

19. A method of claim 18, wherein the diameter of said progressive power zone is about 1.8 mm to about 2.3 mm.

20. A method of claim 17, wherein the power addition profile is defined by at least two linear functions of equation (3).

21. A method of claim 20, wherein the power addition profile is defined by a first linear function of $p(x) = b_1 + k_1 x$ and a second linear function of $p(x) = b_2 + k_2 x$, wherein b_1 has a value of from about 3 to about 10.

22. A method of claim 17, wherein the power addition profile is defined by equation (4), wherein A has a value of from about 3 to about 10.

23. A method of claim 17, wherein the power addition profile is defined by equation (5), wherein A has a value of from about 3 to about 10, and wherein $3 \leq n \leq 5$.

24. A method of claim 17, wherein the surface of the progressive power addition zone is designed by: (I) calculating/generating a series of discrete power points along an X-axis according to any one of equations (3) to (5); (II) using a spline-based function to describe a curve that passes through each of the series of calculated power points and is normal to the central axis and tangent to the curve of the annular region; and (III) rotating said curve around the central axis.

25. A method of claim 17, wherein the series of power points are evenly distributed along the X-axis.

26. A method of claim 17, wherein the number of the series of power points is from 10 to 30.

27. A series of toric multifocal contact lenses comprising contact lenses having a series of different cylindrical optical power corrections, wherein each contact lens in the series has has a central axis, an anterior surface having a first central optical zone, and an opposite posterior surface having a second central optical zone,

>wherein the first central optical zone and the second central optical zone combine to provide a cylindrical optical power to correct astigmatism vision errors and a multifocal power to compensate for presbyopia,

>wherein one of the first central optical zone and the second central optical zone has a central circular area and an annular region surrrounding the central circular area, wherein the central circular area has a diameter of about 1.0 to about 3.0 mm and is a progressive power addition zone for near vision correction and optionally for intermediate vision correction, wherein the annular region has a spherical or aspheric surface having an optical power for distant vision correction, wherein the central circular area and the annular region are concentric with the central axis,

>wherein the other one of the first central optical zone and the second central optical zone is a toroidal surface or a biconic surface,

>wherein the progressive power addition zone has a surface that provides a power addition profile defined by two or more linear functions of equation (3) or by equation (4) or equation (5)

$$
\begin{cases}
p(x) = b_1 + k_1 x & 0 \leq x < x_1 \\
p(x) = b_2 + k_2 x & x_1 \leq x < x_2 \\
\quad \vdots & \\
p(x) = b_i + k_i x & x_{i-1} \leq x < x_i \\
\quad \vdots &
\end{cases}
\tag{3}
$$

$$
p(x) = \frac{A}{2} \cdot \cos\left(\frac{x}{D/2} \cdot \pi \right) + \frac{A}{2}
\tag{4}
$$

$$
p(x) = A \cdot \left[1 - \left(\frac{x}{D/2} \right)^n \right]
\tag{5}
$$

>wherein p(x) is an added power at a distance of x from the center; b_i is a coefficient which is the intercept of a linear line; and k_i is the rate of change of the added power as

function of the distance from the center; A is the maximum added power; D is the diameter of the progressive power addition zone; and n is any number which can be an integer or non-integer larger than 1 but smaller than or equal to 10.

28. A series of toric multifocal contact lenses of claim 27, wherein one of the first central optical zone and the second central optical zone is the toroidal surface defined by equation (2).

29. A series of toric multifocal contact lenses of claim 27, wherein said first central optical zone has said central circular area and said annular region surrrounding said central circular area, and wherein said second central optical zone is said toroidal surface or said biconic surface.

30. A series of toric multifocal contact lenses of claim 29, wherein the diameter of said progressive power zone is about 1.8 mm to about 2.3 mm.

31. A series of toric multifocal contact lenses of claim 23, wherein the diameter of said progressive power zone is about 1.8 mm to about 2.3 mm.

32. A series of toric multifocal contact lenses of claim 31, wherein the power addition profile is defined by at least two linear functions of equation (3).

33. A series of toric multifocal contact lenses of claim 32, wherein the power addition profile is defined by a first linear function of $p(x) = b_1 + k_1 x$ and a second linear function of $p(x) = b_2 + k_2 x$, wherein b_1 has a value of from about 3 to about 10.

34. A series of toric multifocal contact lenses of claim 31, wherein the power addition profile is defined by equation (4), wherein A has a value of from about 3 to about 10.

35. A series of toric multifocal contact lenses of claim 31, wherein the power addition profile is defined by equation (5), wherein A has a value of from about 3 to about 10, and wherein $3 \leq n \leq 5$.

36. A series of toric multifocal contact lenses of claim 27, wherein each of the contact lenses further comprises one or more orientation features that provide a predetermined orientation on an eye.

37. A series of toric multifocal contact lenses of claim 36, wherein the anterior surface comprises a top slab-off zone near the top of the contact lens and a bottom slab-off zone near the bottom of the contact lens.

38. A series of toric multifocal contact lenses of claim 27, werein each contact lens in the series is a soft or hard lens.

39. A series of toric multifocal contact lenses of claim 27, wherein the surface of the progressive power addition zone is obtained by: (I) calculating/generating a series of discrete power points along an X-axis according to any one of equations (3) to (5); (II) using

a spline-based function to describe a curve that passes through each of the series of calculated power points and is normal to the central axis and tangent to the curve of the annular region; and (III) rotating said curve around the central axis.

40. A series of toric multifocal contact lenses of claim 27, wherein the number of the series of power points is from 10 to 30.

41. A series of toric multifocal contact lenses of claim 27, wherein the series of power points are evenly distributed along the X-axis.

42. A toric multifocal contact lens comprising a central axis, an anterior surface having a first central optical zone, and an opposite posterior surface having a second central optical zone, wherein at least one of the first central optical zone and the second central optical zone has a central circular area and an annular region surrounding the central circular area and has a surface that provides along each of a series of meridians a power that decreases progressively from the center to the inner peripheral edge of the annular region and then remains substatially constant, wherein the power profile of said circular area along each of the series of meridians is describe by a plurality of linear equations (6) or by equation (7) or (8)

$$
\begin{cases}
P_\theta(x) = b_1 + k_1 x + p_\theta & 0 \le x \langle x_1 \\
P_\theta(x) = b_2 + k_2 x + p_\theta & x_1 \le x \langle x_2 \\
\quad \vdots \\
P_\theta(x) = b_i + k_i x + p_\theta & x_{i-1} \le x \langle x_i \\
\quad \vdots
\end{cases} \tag{6}
$$

$$
P_\theta(x) = \frac{A}{2} \cdot \cos\left(\frac{\pi x}{D/2}\right) + \frac{A}{2} + p_\theta \tag{7}
$$

$$
P_\theta(x) = A \cdot \left[1 - \left(\frac{x}{D/2}\right)^n\right] + p_\theta \tag{8}
$$

in which $P_\theta(x)$ is a power along a meridian at a distance of x from the center within said circular area; b_i is a coefficient which is the intercept of a linear line; k_i is the rate of change of the added power as function of the distance from the center; and p_θ is the base power along that meridian,

wherein the central circular area has a diameter of about 1.0 to about 3.0 mm,
wherein the central circular area and the annular region are concentric with the central
axis and provide one identical cylindrical optical power for correcting astigmatism vision
errors.

43. A toric multifocal contact lens of claim 36, wherein the power profile of said circular area
along each of the series of meridians is described by at least two linear functions of
equation (6).

44. A toric multifocal contact lens of claim 37, wherein the power profile of said circular area
along each of the series of meridians is described by a first function of $P_2(x) = k_1^* x + b_1 +$
P_θ and a second function of $P_2(x) = k_2^* x + b_2$, wherein b_1 has a vlaue of from about 3 to
about 10.

45. A toric multifocal contact lens of claim 36, wherein the power profile of said circular area
along each of the series of meridians is described by equation (7), wherein A has a value of
from about 3 to about 10.

46. A toric multifocal contact lens of claim 36, wherein the power profile of said circular area
along each of the series of meridians is described by equation (8), wherein A has a value of
from about 3 to about 10, wherein $3 \leq n \leq 5$.

47. A toric multifocal contact lens of claim 33, wherein said circular area has a diameter of from
about 1.8 mm to about 2.3 mm.

48. A toric multifocal contact lens of claim 36, further comprising one or more orientation
features that provide a predetermined orientation on an eye.

49. A toric multifocal contact lens of claim 42, wherein the anterior surface comprises a top
slab-off zone near the top of the contact lens and a bottom slab-off zone near the bottom of
the contact lens.

50. A toric multifocal contact lens of claim 36, wherein said toric multifocal contact lens is a soft
lens.